

Vol. XXXIX

THE CHANCERY COURT
DAVIDSON COUNTY, TENNESSEE

HONORABLE ELLEN HOBBS LYLE, CHANCELLOR

MARIA M. SALAS, CLERK AND MASTER

ABU-ALI-ABDUR'RAHMAN, ET AL
Plaintiffs/Appellants

FILED

AUG 22 2018

Clerk of the Appellate Courts
Rec'd By _____

VOLUME 16 of 28

CERTIFIED
TRANSCRIPT
OF
Cause

Appearance No. 18-183-III
CHANCERY COURT

Vs

No. M2018-01385-SC-RDO-CV

SUPREME COURT

TRANSMITTED ON:

August 21, 2018

Execution No
SUPREME COURT

APPEALED
TO
Next Term,
20

TONY PARKER, IN HIS OFFICIAL CAPACITY AS TENNESSEE COMMISSIONER OF
CORRECTION, ET AL
Defendants/Appellees

Trial Transcript from July 16, 2018
Pages 1369 - 1520

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1 suppose, for heavy smokers.

2 Q. And just to clarify, you mentioned several
3 drugs that the Court is well familiar with at this
4 point. But were you, before beginning to look at
5 these autopsies, familiar with the function of
6 potassium chloride as a medical doctor?

7 A. Oh, yes. Potassium chloride is used in
8 cardiac surgery to stop the heart.

9 Q. And that's something, even though you work
10 primarily on the deceased, that you knew from your
11 residency; is that fair?

12 A. From medical school. I watched cardiac
13 surgeons stop the heart.

14 Q. So as -- again, just still speaking sort
15 of at a level of generality, what struck you as
16 you looked through these autopsies that then made
17 you examine them more closely?

18 A. I was struck by the abnormalities in the
19 lung, as I mentioned. All of the lungs were
20 heavy. There were none of them that were what I
21 would expect, in that 350- to 400-gram range.

22 But in addition to that, they all
23 showed -- not all, but the majority of them, over
24 85 percent of them showed pulmonary edema. And
25 that's certainly not expected in someone who dies

1 instantaneously. And a good number of them showed
2 fulminant pulmonary edema, which indicates it's
3 sudden and severe. And that's evidenced by
4 bubbles, froth and foam, both in the lung tissue
5 and in the larger airways.

6 I don't see that in a hospital autopsy
7 except maybe once every 10 years, where someone
8 has had a catastrophic problem with their heart
9 that has led to acute, fatal pulmonary edema.

10 Q. You've noted initially that the lungs were
11 heavy. Is that a specific finding or considered a
12 nonspecific finding? What does that mean to you?

13 A. It's a nonspecific finding, but as I say,
14 it was unexpected to me.

15 Q. If someone were to suffer a brain aneurysm
16 and fall dead quickly, would they have heavy
17 lungs?

18 A. They would not. If someone dies
19 instantaneously, they would not have heavy lungs.
20 That's the only way we know the normal weight of
21 lungs, other than taking it out at surgery, and no
22 one would take out a normal lung at surgery.

23 Q. So let's talk about pulmonary edema. Can
24 you explain for the Court what that term means in
25 an anatomical way?

1 A. Pulmonary edema is a accumulation of fluid
2 in the airspaces of the lung, and it has a variety
3 of causes, the final common pathway of which is
4 always injury to the blood vessels and the lining
5 cells of the lung, allowing fluid and sometimes
6 blood, to escape from the blood vessels into the
7 airspaces.

8 Q. What's the difference in a finding of
9 pulmonary edema versus a finding of congestion in
10 the lungs?

11 A. Congestion, as used by pathologists,
12 refers to an increased amount of blood in an organ
13 or tissue. So tissues that are congested will
14 have dilated blood vessels and will be very red
15 and boggy on gross examination, but they won't
16 necessarily show edema. They'll be just full of
17 blood. The blood is in the right place, though,
18 in the blood vessels.

19 Q. So if a lung is said to congested, how is
20 that different from edema? Where is the fluid?

21 A. The fluid is still in the blood vessels.

22 Q. As opposed to?

23 A. Being in the airspaces. Having said that,
24 it's certainly the case that persistent, severe
25 congestion can be followed by pulmonary edema if

1 it is present for long enough.

2 Q. That was going to be my next question.

3 What are the known causes of pulmonary edema?

4 A. So people typically divide pulmonary edema
5 into cardiogenic and non-cardiogenic.

6 Cardiogenic pulmonary edema occurs when
7 the heart is not pumping properly and basically
8 blood backs up behind it into the lungs. You get
9 a kind of hyperstatic pressure that leads to fluid
10 leaking into the lungs.

11 Non-cardiogenic pulmonary edema is a broad
12 range of causes, including inhalation of toxic
13 gas, injection of the toxins, drowning. A variety
14 of physical chemical assaults to the lung can
15 cause pulmonary edema of the non-cardiogenic type.

16 Q. From your clinical practice do you know
17 what the symptoms of pulmonary edema are?

18 A. Yes. Just as a one-time medical student,
19 intern, and now as a practicing pathologist, we
20 all know that pulmonary edema, when it begins, the
21 patients are short of breath. And they feel like
22 they can't catch their breath, and they breathe a
23 bit faster.

24 As it gets worse, they may have the sense
25 of air hunger and be gasping for air. As it gets

1 even worse, they may have a sense of terror,
2 panic, drowning, asphyxiation. It's a medical
3 emergency and it's a state of extreme discomfort.

4 Q. In a hospital setting, if someone is
5 experiencing those symptoms, what is done for that
6 person?

7 A. They're given diuretics to remove fluid
8 from the body and, therefore, also from the lung.
9 And because they're in a such a state of panic,
10 they're given morphine, typically.

11 It used to be thought that morphine was
12 useful to dilate the blood vessels in the lungs,
13 but we now know that -- we now believe that the
14 morphine is more helpful as a palliative measure.
15 It calms the patients down and thereby reduces the
16 heart rate because it reduces the terror. So
17 diuretics, oxygen, and opiates are helpful.

18 Q. You said that there were indications in a
19 number of these autopsies of "fulminant pulmonary
20 edema."

21 Could you tell us what "fulminant" means
22 in that context?

23 A. So "fulminant" refers to something that is
24 sudden and severe. And when I see froth --

25 THE COURT: Pardon me. Are you

1 saying, like, f-o-m-e-n, like "foment" --

2 THE WITNESS: No, "fulminant,"

3 f-u-l --

4 THE COURT: "Fulmonate,"

5 f-u-l-m-o-n-a-t-e?

6 THE WITNESS: No, f-u-l-m-i-n-a-n-t.

7 THE COURT: "Fulminant." Thank you.

8 All right.

9 THE WITNESS: So "sudden and severe"
10 in this context would mean it was -- even though
11 it showed fluid in the form of bubbles in the
12 tracheal/bronchial tree, so not just fluid and
13 bubbles in the lung tissue, but enough that it
14 actually left the lungs and went up into larger
15 airways.

16 That, I think to anyone, is evidence
17 of fulminant pulmonary edema.

18 BY MS. HARWELL:

19 Q. You've also said that there were a number
20 more where you found acute pulmonary edema. What
21 does "acute" mean to a pathologist in that
22 context?

23 A. "Acute," when it's used properly, always
24 refers to a time frame. And in this context we're
25 talking about pulmonary edema as something that

1 comes on over the course of minutes. In other
2 situations, like infections of bones it has acute
3 osteomyelitis, acute infection of the bone is
4 weeks, but here we're talking about something that
5 comes on over the course of minutes.

6 Q. And when you looked at these autopsies,
7 what allowed you to make a finding that something
8 was acute?

9 A. I knew the time course, the time course of
10 the execution, so it had to be acute. That's one
11 way to know. But I also had the knowledge that
12 there were these bubbles, this foam, this froth,
13 and that doesn't appear in chronic pulmonary edema
14 that is compensated. You just will see heavy
15 lungs and some edema fluid. When you actually
16 have bubbles, foam and froth, it indicates acute
17 pulmonary edema.

18 Q. So you talked about two different concepts
19 there and how to break them apart. First you
20 talked about time course. And I think I know that
21 in assessing the time course, you had some
22 assumptions about the people who came in to be
23 executed; is that correct?

24 A. Yes. I had some assumptions and some
25 knowledge. I know that -- I understand that the

1 inmates were on death watch before being executed
2 and were mobile, up and around, talking to family
3 members and religious leaders. And I didn't see
4 any evidence, at least in the death watch reviews
5 that I read, that anyone was sick, unable to walk
6 properly, was short of breath.

7 I would have thought that something like
8 that would be recorded, and I didn't see any
9 evidence of that.

10 Q. And to be clear, Dr. Edgar, if somebody
11 had this level of edema, would it cause symptoms
12 that would be noticeable to a layperson?

13 A. Absolutely. If they had the findings in
14 the worst of these cases, they would be gravely
15 ill.

16 Q. You also talked, then, about froth and
17 foam, and I would like us to discuss that concept
18 for the Court a little bit before we get into the
19 actual autopsies.

20 When you say "foam," what composes this
21 foam?

22 A. So foam in the setting of pulmonary edema
23 is composed of three main things, perhaps four.
24 The three main things are this protein that lines
25 the surface of normal lungs that helps to reduce

1 the surface tension, so it will keep the airways
2 in the airspaces expanded. And it's called
3 surfactant. It's like a detergent.

4 Q. Could you spell that for the court
5 reporter?

6 A. S-u-r-f-a-c-t-a-n-t. It's what babies
7 born very prematurely lack so their lungs are not
8 expandable.

9 So surfactant mixes with water and air,
10 and together those things, under the energy of
11 breathing, moving air back and forth and in and
12 out at the airspaces, produce bubbles. And it's
13 fine bubbles. Foam or froth is the term that's
14 used.

15 Q. And did you provide me with a medicolegal
16 study regarding the production of foam and froth
17 with regard to drowning?

18 A. Yes, I did.

19 Q. I'm going to show you that study. It's
20 previously been provided to the defense. I'll ask
21 if you recognize that study.

22 A. I do recognize it.

23 Q. You provided the study for us --

24 MS. HARWELL: Your Honor, for the
25 record, it's a medicolegal study of drowning

1 deaths.

2 BY MS. HARWELL:

3 Q. Because the study outlines what
4 important -- how does it highlight what you just
5 said?

6 A. Well, it discusses what pulmonary edema
7 froth is. At the last paragraph on page 3, it
8 says, "The froth consists of a whipped-up mixture
9 of drowning medium, air and secretions from
10 bronchial mucous glands."

11 Bronchial mucous glands, I think, are
12 actually a lesser component. When I said there
13 are possibly four components, surfactant, when
14 chemists have looked at the composition of
15 pulmonary edema foam, they find more surfactant
16 than mucous, but there are situations in which the
17 pulmonary edema fluid is caused by excess mucous.

18 In any event, a it's a whipped-up mixture
19 of air, fluid and some kind of protein.

20 Q. And when you say "whipped-up," that
21 implies some sort of energy or force; is that
22 correct?

23 A. Some kind of physical action, yes. It
24 doesn't just happen by itself in a non-moving
25 lung.

1 Q. And in a moving lung -- maybe I'm being a
2 little bit too basic, but what is the action that
3 whips it up?

4 A. It's just the action of breathing, moving
5 of the air in and out of the airspaces and the
6 moving of fluid in and out of the airspaces.

7 Q. So that is to say foam is only formed when
8 the subject is breathing?

9 A. Correct.

10 Q. Is the presence or absence of foam or
11 froth in a lung an objective or subjective finding
12 for a pathologist?

13 A. I think that's always a difficult question
14 to answer, but along the spectrum of objective and
15 subjective, it's closer to the objective end.
16 It's a finding that's readily recognizable and
17 difficult to miss. And that's why I would
18 consider it to be more on the objective side.

19 Q. I think at one point you told me it's sort
20 of like recognizing the color of blue?

21 A. Yes, it's like that. There are people who
22 might not immediately recognize blue, but in the
23 right light, it's blue to everyone.

24 Q. If you review an autopsy and there's no
25 froth or foam noted on the exam, does that

1 automatically, in your mind, rule out the
2 possibility that any edema noted was acute?

3 A. I don't think I could say that. It's
4 quite possible that there was acute edema that
5 began but was abruptly terminated by death. So
6 you may have a minor amount of edema that's not
7 visible to the naked eye but could be seen under
8 the microscope if the patient didn't live long
9 enough to see it develop.

10 Q. Are there also things that can happen
11 postmortem to a body that would cause foam or
12 froth to change or dissipate?

13 A. Yes. After death, and I think probably
14 from people's own experience, you know that foam
15 and froth eventually breaks down. Bubbles don't
16 last forever, they disappear. I don't know
17 specifics, but I imagine that there are physical
18 constraints on what would keep bubbles around,
19 temperature and so forth.

20 But in time, bubbles break down and leave
21 a little bit of fluid behind.

22 Q. So that is to say if there's extra fluid,
23 it could have, at one point, been foam or froth?

24 A. Absolutely.

25 Q. To be clear just about your findings as

1 you reviewed these autopsies, did you report a
2 finding where the state pathologist did not?

3 A. (Pause.)

4 Q. That is to say, does your report basically
5 adopt or attribute or interpret findings of other
6 pathologists, or did you go back in and
7 second-guess them?

8 A. No, I did not second-guess. I took what I
9 saw to be correct because I had no reason not to.
10 I would say that there were occasions in these
11 reports where things were noted on examination but
12 not indicated in the final diagnosis, so I was
13 sort of second-guessing them there, saying, "Gosh,
14 I would have put that brain tumor in the final
15 diagnosis line."

16 But I wasn't -- I took what I had as
17 someone going in and seeing for themselves.

18 Q. Thank you.

19 Let's turn to the autopsies themselves
20 now. Did we prepare a chart of your findings with
21 regard to each of these autopsies?

22 A. Yes.

23 Q. Do you have one with you?

24 A. I do not.

25 Q. I will hand you one.

1 MS. HARWELL: Your Honor, if I could
2 put it on the ELMO as well, if it please the
3 Court?

4 THE COURT: Yes, that would be fine.
5 Thank you.

6 MS. HARWELL: Here we go.

7 BY MS. HARWELL:

8 Q. Dr. Edgar, I don't know if it will become
9 necessary, but that screen in front of you is
10 actually a touch screen, so if you need to gesture
11 or indicate something for the Court, that actually
12 works.

13 A. Okay.

14 Q. Have you seen this chart before?

15 A. Yes, I have.

16 Q. In fact, is it a chart that you and I
17 prepared together?

18 A. Yes, it is.

19 Q. To be clear, I did not do the science
20 parts; you told me how to do the science parts?

21 A. I added -- I basically abstracted the
22 science parts into the chart.

23 Q. And my role was a little more pedantic of
24 putting things in alphabetical order and making it
25 look pretty; is that right?